

Sphaeniscus Becker and *Euphranta* Loew of the Oriental and Pacific Regions¹ (Tephritidae-Diptera)

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REVIEWS OF THE GENERA *Sphaeniscus* Becker and *Euphranta* Loew of the oriental and Pacific regions are presented in this study. The generic concepts of *Euphranta* have been revised and *Staurella* Bezzi is considered a subgenus of *Euphranta*. I have placed six species in *Euphranta* (*Euphranta*) and 25 species in *Euphranta* (*Staurella*). One new species in each of these groups is being described from the Philippine Islands. The drawings have been prepared by Marian S. Adachi, University of Hawaii; this help is greatly appreciated.

SPHAENISCUS Becker

Sphaeniscus Becker, 1908. Berlin Zool. Mus., Mitt. 4: 138.

Spheniscomyia Bezzi, 1913, Ind. Mus., Mem. 3: 146-147 [Invalid emendation of *Sphaeniscus* Becker].

Characterized by having vein R_{4+5} bare or but sparsely bristled; by having four scutellar bristles (except for *S. neivae* (Bezzi) from Africa); the r-m crossvein situated toward the apical portion of cell 1st M_2 ; the arista pubescent; the cubital cell with a very short angular lower apical lobe; the postocular cilia and other cephalic bristles all black; the body shining black without yellow markings; the wings black with a pattern of hyaline spots

including four to five on the hind margin and the basal portion of the wing.

KEY TO SPECIES OF *Sphaeniscus* KNOWN FROM THE PACIFIC AND ORIENTAL REGIONS*

1. Wings with four hyaline spots on the hind margin (Fig. 1) 2
 Wings with three hyaline spots on the hind margin (S. E. Asia)
 *quadrincisus* (Wied.)
2. Two hyaline spots in median portion of wing (Fig. 1) (Fiji) . *binoculatus* (Bezzi)
 No such hyaline spots (Fig. 2) (Pacific and Orient) . *sexmaculatus atilia* (Walker)

Sphaeniscus binoculatus (Bezzi)

Fig. 1

Spheniscomyia binoculata Bezzi, 1928, Dipt. Brachycera Fiji Isl., 115-116.

This species is closely related to *S. sexmaculatus*. It is distinguished by having two round isolated hyaline spots in the middle of the wing, one situated at the upper basal third of cell 1st M_2 , slightly over vein M_{1+2} , and one at the upper middle of cell R_5 (Fig. 1) rather than having the distal wedge-shaped mark on the hind margin of the wing extending through cell R_5 almost to vein R_{4+5} and the wedge-shaped proximal mark extending to the middle of cell 1st M_2 (Fig. 2). The

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* *Spheniscomyia apicalis* Shinji (1939: 322) is apparently a *Trypeta* (Ito, 1947).

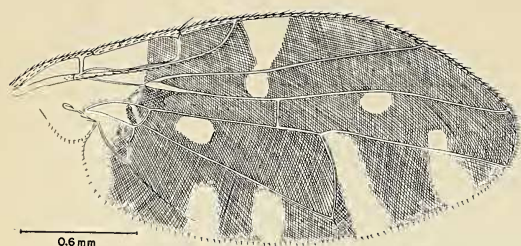


FIG. 1. Wing of *Spbaeniscus binoculatus* (Bezzi).

recumbent hairs on the mesonotum are black on the specimen of *binoculatus* at hand and the mesonotum is subshining black, thinly gray pollinose. In *sexmaculatus* the recumbent hairs on the mesonotum are yellow and the dorsum is rather thickly gray pollinose. The ovipositor appears to have a shorter piercer and basal segment than in *sexmuculatus* but it is not being described as the specimen at hand is in poor condition.

Length: body and wing, 2.5–3 mm.

Type locality: Yasawa and Cuvu, Fiji.

Type in the British Museum (Natural History).

A specimen at hand is from Lau, Fiji, Oneata, Aug. 16, 1924 (E. H. Bryan, Jr.).

Sphaeniscus sexmaculatus atilia (Walker)
new comb.

Fig. 2a–b

Trypeta atilia Walker, 1849, List Dipt. Ins. Brit. Mus. 4: 1021.

Trypeta melaleuca Walker, 1864, Linn. Soc. Lond., Proc. 7: 238.

Trypeta sexincisa Thomson, 1868, Dipt. Eug. Resa, 579.

Trypeta formosana Enderlein, 1911, Zool. Jahrb. 31(3): 427.

Spheniscomyia sexmaculata Bezzi (*nec* Macquart), 1913, Ind. Mus., Mem. 3: 148.

Spheniscomyia sexmaculatus Shiraki, 1933, Fac. Sci. Agri. Taihoku Imp. Univ., Mem. 7(2): 354.

Spheniscomyia sexmaculata Malloch, 1939, Linn. Soc. N. S. Wales, Proc. 64(3–4): 450.

S. atilia has been considered as specifically distinct from *sexmaculatus* but I have not been able to find characteristics which appear to be of specific importance. I have compared specimens from a wide range of localities through the Pacific and Orient with those from Africa, and the coloring of the hind tibiae and the extent of the pollinosity on the mesonotum appear to be the only differences. I feel that this should be treated as a subspecies. *S. atilia* is distinguished from typical *sexmaculatus* by having the hind tibiae yellow, and the pollinosity of the mesonotum not arranged in a definite pattern. Typical *sexmaculatus* has the hind tibiae nearly all black, yellow only on the apex, and the mesonotum with the pollen arranged into four rather distinct longitudinal gray vittae. The scutellum and the sides of the mesonotum are very lightly dusted, shining black in most lights. The pollinose lines are not clearly visible if viewed directly from above but stand out if the specimen is examined at an angle toward the head. Munro (1938: 36) and Chen (1947: 103) have indicated that the proximal hyaline marginal spot of the wing is narrower in *atilia* than in *sexmaculatus*; I have not been able to demonstrate any significant differences in the wing pattern (Fig. 2a). It also should be noted that when specimens of *atilia* are examined in the same position suggested for *sexmaculatus* faintly shining vittae are seen to be present, also the hind tibiae may be discolored basally in some specimens. Malloch's specimens from the Admiralty Islands and Papua (1939: 450) were evidently of this type. The characters of the ovipositor of *S. sexmaculatus atilia* are as in Fig. 2b.

This subspecies is widespread over the Orient and much of the Pacific. I have studied specimens from the following localities. Philippine Islands: Mindoro, Feb. 1945 (F. E. Skinner); Tacloban, Leyte (Baker); Los Baños (Baker) and Baguio, Benquet (Baker). Malaya: Kuala Lumpur, July–August, 1948, ex flower heads of *Hyptis capitata* (N. L. H. Krauss). India: Tanakpur, U. P., November,

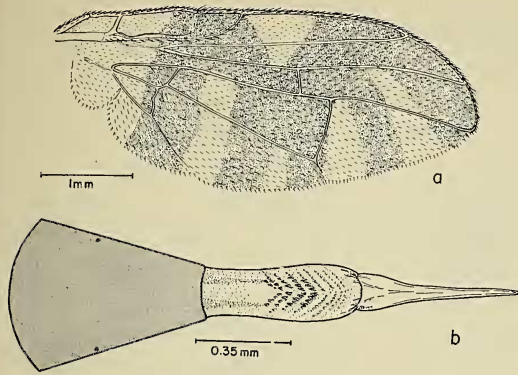


FIG. 2. *Sphaeniscus sexmaculatus atilia* (Walker). a, Wing; b, ovipositor.

1949 (N. D. Waters) and Ranikhet, U. P., July, 1949, on flowers (F. A. Bianchi). Ryukyu Islands: Ishigaki, December, 1952 (G. E. Bohart). China: Suisapa, Lichuan Dist. W. Hupeh, 1,000 m., July, 1948, and Sang-Hou-Ken to Mo-tai-chi, Hupeh, July, 1948.

EUPHRANTA LOEW

Euphranta Loew, 1862. Mon. Europ. Bohrlf., p. 28.

This genus is recognized by the presence of fine hairs on the pleuroterga (the lateral divisions of the metanotum); by the absence of ocellar, presutural, and prescutellar bristles (in *Euphranta* (*Euphranta*)); by having strong sternopleural and two to three pairs of inferior fronto-orbital bristles. *Staurella* Bezzi appears to be a subgenus of *Euphranta*, the only satisfactory character which I have found for separating them is the presence or absence of the prescutellar bristles. Some of the literature dealing with these flies has contained some obvious errors which have confused the generic concepts. Bezzi (1913: 122) and Hendel (1927: 68) stated that dorsocentral bristles are absent in *Euphranta*. Hendel previously (1914: 80) said that dorsocentrals were absent, at least in the females. I have studied the genotype and a number of other species, and descriptions of species, and have found none which has no dorsocentrals; all, how-

ever, have lacked prescutellars in both sexes. I believe Bezzi and Hendel were actually referring to the prescutellar rather than the dorsocentral bristles. Chen (1947: 80), following Bezzi, indicated that *Euphranta* lack dorsocentral bristles. Hering (1938: 24) made the same statement except that the lack of dorsocentrals was included parenthetically and was attributed to Hendel and he said that because of their position he was of the opinion that Hendel was referring to prescutellar bristles. Chen (*op. cit.*: 85) said that *Euphranta* may also be distinguished from *Staurella* by having the base of vein R_{4+5} distinctly bristled, in contrast to *Staurella* which has R_{4+5} bare. Bezzi (1913) used this character in separating *Staurella* but indicated that it may be variable. I have found this character to be very inconsistent, bristles are present at the base of R_{4+5} in most of the species of *Staurella* which I have studied. A number of other characters have been mentioned as useful in separating these groups: The position of the r-m crossvein, whether it is before or after the middle of the discal cell; the position of the dorsocentral bristles in relation to the anterior supraalar bristles; the comparative length of the subcostal cell and the shape of the third antennal segment. I have checked these characters through all of the available species of both groups and have found them to be of no value in separating these groups. In view of this and in the absence of any apparent characters which are consistent, other than the presence or absence of prescutellar bristles, it would seem more proper to consider *Staurella* as a subgenus of *Euphranta*. The genus *Staurocneros* Hering is close to *Staurella* and might also prove to be a subgenus of *Euphranta*. Hering distinguished it thus: the first section of the costa as long or longer than the second, the dorsocentral bristles situated just slightly behind a line drawn between the anterior supraalars; the m crossvein situated beyond the middle of cell 1st M_2 ; the arista short haired; and the second tibia having only one long apical spine. Some of these may not be

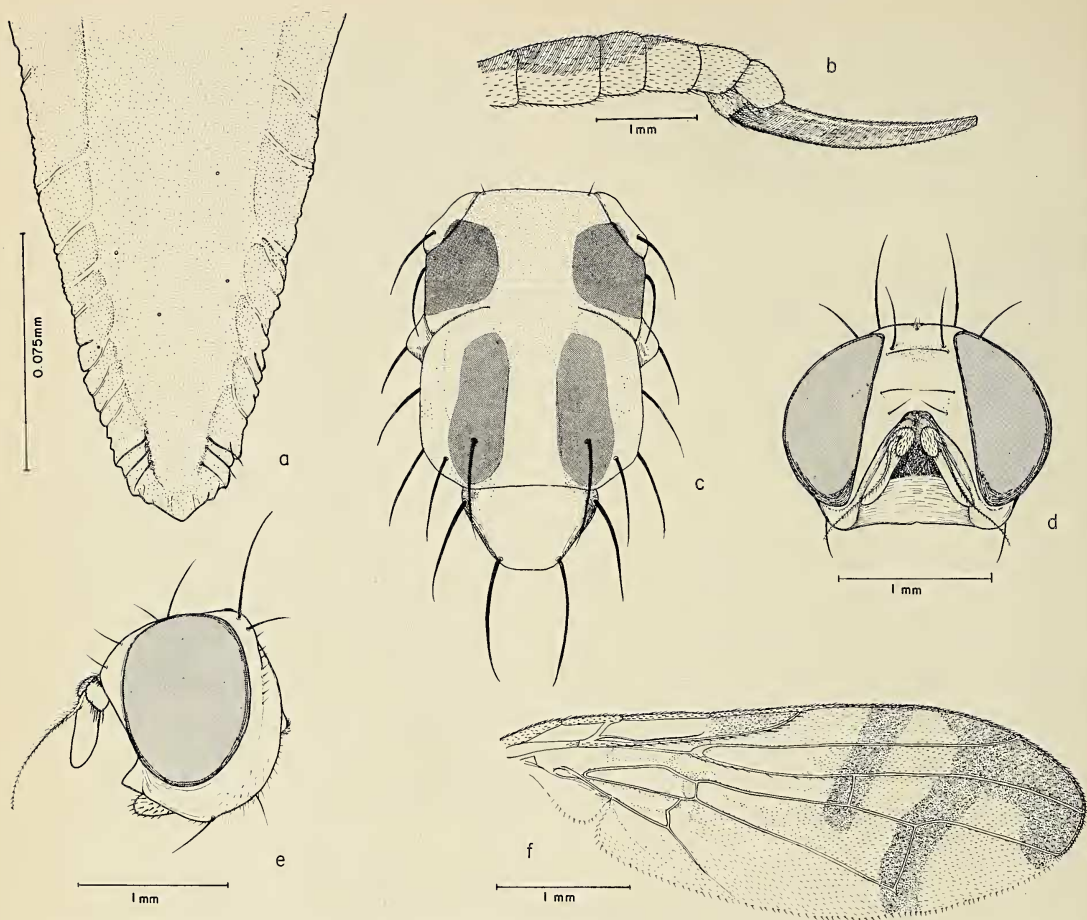


FIG. 3. *Euphranta skinneri* n. sp. *a*, Apex of piercer; *b*, lateral aspect of abdomen and basal segment of ovipositor; *c*, dorsal aspect of thorax; *d*, frontal aspect of head; *e*, lateral aspect of head; *f*, wing.

constant, *Staurocneros punctilabris* (Bezzi) has two apical spines on the middle tibia.

Genotype: *Euphranta connexa* (Fabricius).

The genus is largely oriental and Pacific in distribution although one species is perhaps present in the Ethiopian region. I have been able to place the following species in this subgenus: *E. connexa* (Palearctic and Indo-australian); *E. flavorufa* Hering (Manchuria); *E. maxima* Hering (Borneo); *E. naevifrons* Hering (Sunda Isls.); *E. scutellata* Malloch (Solomon Isls.) and *E. skinneri* n. sp. (Philippine Isls.). The following species have not been properly placed: *E. hammersteini* Enderlein (Madagascar); *E. minor* Hendel (Aus-

tralia) and *E. nigra* Enderlein (Sumatra). Most of the species described as *Euphranta* belong in *E. (Staurella)*. *Euphranta latilimbata* Enderlein has been placed in *Staurocneros*.

One new species is at hand.

Euphranta skinneri n. sp.

Fig. 3a-f

This species is very closely related to *Euphranta maxima* Hering, from Borneo (Hering, 1941: 14-15). The two differ in body coloration and markings; in wing markings and in the length of the ovipositor. The most obvious character for separating *skinneri* is that

the basal brown spot on the costal margin occupies only the subcostal cell and does not extend through cell R_2 to vein R_3 as it does in *maxima*. The thorax is predominantly yellow, not yellow-brown, and the paler markings of the thorax, described by Hering as "hellgelben," are whitish, just faintly yellowed. The front is yellow in *skinneri*, with a faint brownish discoloration in the middle; not with a velvety black spot as in *maxima*. The whitish median stripe on the mesonotum ends before the suture in *skinneri*, in *maxima* it extends beyond the suture, halfway between the presutural and the scapular bristles. The first abdominal tergum is rufous medially in *skinneri* and is all black in *maxima*. In the female of *skinneri* the dark brown to black stripes which extend down the sides of the dorsum converge on tergum five and extend as a median line to the apex of the sixth tergum. In *maxima* the side stripes extend to the middle of the fifth tergum and the sixth is entirely yellow-brown.

Dr. Hering in correspondence, has supplied the following corrections to his description of *maxima*. He says that the second antennal segment, not the third, is dark brown, not black. He also says that the oviscapt in *maxima* is longer than the remainder of the abdomen, not equal to it (120:100). In *skinneri* the basal portion of the ovipositor is shorter than the abdomen (60:80).

MALE

Head: Almost all yellow with a tinge of brownish in the middle of the front. The front is broadest at the lower portion and is slightly narrowed near the ocelli, at the broadest point it is equal in width to or slightly broader than one eye. Three pairs of inferior fronto-orbital and one pair of superior fronto-orbital bristles are present. Ocellar bristles are lacking; the post vertical bristles are small and converged (Fig. 3*d*). The face is entirely clear yellow and slightly concave as seen in lateral view. The first antennal segment is small and inconspicuous and is largely hidden by the forward development of the head which cov-

ers the bases of the antennae. The second antennal segment is almost one-half as long as the third. The first and second segments are densely covered with short, black bristles on the dorsal surface (Fig. 3*e*). The basal segments are yellow to rufous. The third segment is entirely yellow, is densely pubescent and obtusely pointed at apex (Fig. 3*e*). The arista is rather thickly plumose. The palpi are all yellow, are rather thickly covered with short, black bristles, especially on the ventral portion, and are just slightly larger than the third antennal segment. The occiput is all yellow.

Thorax: Yellow except for four large polished black spots on the mesonotum, except for the shining black metanotum, except for a large brown spot on each hypopleuron and for a narrow longitudinal stripe which extends through the middle portion of each mesopleuron across the top edge of the proepimeron. The black markings of the mesonotum are arranged as follows: covering the entire area, on each side, from the hind margin of the humerus to the suture; with a pair of broad postsutural submedian black vittae extending to the scutellum and extending laterally to the bases of the inner supraalar bristles. Prescutellar bristles are lacking. Three pairs of supraalar and one pair of dorsocentral bristles are present. The dorsocentrals are situated in front of a line drawn between the inner supraalars but are much closer to the inner than to the anterior supraalars (Fig. 3*c*). The humeral bristles are well-developed. There is also a strong bristle on the upper portion of each sternopleuron. Four strong scutellar bristles are present.

Legs: Almost entirely rufous, the front tibia is slightly discolored with brown.

Wings: Predominantly hyaline, with a very faintly brownish tinge at the base; the stigma is yellow-brown, and a faint tinge of brown extends over the forking of the radial sector. A brown vitta extends transversely over the wing from the median portion of cell R_2 over the r-m crossvein and about halfway through

cell 1st M_2 . The entire apical portion of wing is brown. An arm of this marking extends transversely over the wing across the m cross-vein to the wing margin (Fig. 3f). The cubital cell has a very short, acute point on the lower apex. Vein $Cu_1 + 1st A$ is very slightly curved and extends to the wing margin.

Abdomen: Chiefly yellow to rufous, with a black stripe extending longitudinally down the sides from the first to, and including, the fourth tergum. The fifth tergum is entirely yellow to rufous and has a strong ring of black bristles at its apex. The anal area (tenth segment, proctiger) is greatly extended and elongate. It is strongly convex dorsally. The ventro-apical lobes of the ninth tergum are also very elongate.

Length: body, 8.5 to 8.8 mm.; wings, 7.5 mm.

FEMALE

Fitting the description of the male except that the lateral black vittae of the abdomen converge on the middle portion of the fifth abdominal segment and extend as a single median black vitta to the end of the sixth tergum.

Ovipositor: Dark brown to black and very prominent. The visible portion (*in situ*) is equal in length to the combined lengths of abdominal segments three to six (Fig. 3b). The extended ovipositor is about 6.5 mm. long, the basal segment is comparatively long and slender, 3.0 mm. by 1.0 mm. at its widest point. The spiracles are situated about 0.62 mm. from the base of the segment. The inversion membrane is damaged on the specimen which has been relaxed, it apparently is about 1.8 mm. by 0.21 mm. at its widest point. The rasper extends to within about 0.42 mm. of the base of the segment. The piercer is 1.7 mm. by about 0.15 mm. at its widest point. The apical portion is serrate (Fig. 3a). Three tiny inconspicuous setae are situated just before the apex. The opening of the oviduct is about 0.15 mm. from the apex of the segment.

Holotype male, allotype female, and nine paratypes, six males and three females, from Pangl, Mindanao, Phil. Is., March, 1950, ex Cucurbitaceae (F. E. Skinner). The type and allotype are being deposited in the United States National Museum. The paratypes are being deposited in the following collections: Bernice P. Bishop Museum, British Museum (Natural History), Hawaiian Sugar Planters' Association, and the University of Hawaii.

EUPHRANTA (STAURELLA) Bezzi, n. comb.

Staurella Bezzi, 1913, Ind. Mus., Mem. 3: 121-122.

I am considering this as a subgenus of *Euphranta* inasmuch as the only reliable character I have found for separating it has been the presence of the prescutellar bristles (see discussion under *Euphranta*). Much confusion has existed in the literature regarding the status of this group; most of the species have been described under *Euphranta*. The following species apparently belong in *Euphranta* (*Staurella*): *E. apicalis* Hendel (Orient); *E. camelliae* (Ito) (Japan); *E. canangae* n. sp. (Philippine Islands); *E. chrysopila* Hendel (Formosa); *E. corticicola* (Hering) (Java); *E. conjuncta* Hendel (Ceylon); *E. crux* (Fabricius) (Orient); *E. dissoluta* (Bezzi) (India); *E. jucunda* Hendel (Formosa); *E. lemniscata* Enderlein (Orient and Micronesia); *E. licenti* Zia (China); *E. linocierae* Hardy (Australia); *E. luteifasciata* (Senior-White) (Ceylon); *E. maculifemur* (de Meijere) (Sumatra); *E. maculifrons* (de Meijere) (Java); *E. mediofusca* (Hering) (Bismark Archipelago); *E. mikado* Matsumura (Japan, China); *E. nigrescens* (Zia) (China); *E. nigripeda* (Bezzi) (India); *E. nigrocingulata* (Hering) (Burma); *E. oshimensis* (Shiraki) (Japan); *E. oshimensis* "form" *separata* (Ito) (Japan); *E. rivulosa* Bezzi (Fiji); *E. sexsignata* Hendel (Formosa); *E. suspiciosa* (Hering) (Burma); *E. suspiciosa scutellaris* (Chen) (China) and *E. zeylandica* Senior-White (Ceylon).

Staurella circumscripta Hering and *S. flavina*

Hering have been placed in the genus *Staurocneros*.

Genotype of *Staurella*: *S. crux* (Fabricius).

One new species is at hand from the Philippines.

Euphranta (Staurella) canangae n. sp.

Fig. 4a-d

This species appears to be closely related to *Euphranta (Staurella) linocierae* Hardy from Australia but the coloration of the wing and body, and the wing venation differ considerably in the two species. The most striking differences are as follows: in *canangae* the subcostal cell is short, about half as long as the second costal cell and vein R_{1+2} ends well before a point opposite the r-m crossvein, in *linocierae* the subcostal cell is about three-fourths as long as the second costal cell and R_{1+2} ends beyond r-m; in *canangae* the hyaline mark which extends from the median portion of the costa is situated before the r-m crossvein and extends only to vein R_{4+5} , in *linocierae* it is situated beyond r-m and extends almost to the posterior margin of the wing; in *canangae* the r-m crossvein is situated beyond the middle of cell 1st M_2 , in *linocierae* before the middle; in *canangae* the hyaline spot on the costal margin near the end of cell R_2 is separated from the median hyaline spot by a distance equal to or greater than two times its length (Fig. 4a), rather than being narrowly separated from the median mark by less than its length as it is in *linocierae*; no hyaline spot is present in cell 2nd M_2 of *canangae*, whereas in *linocierae* a spot is present (Hardy, 1951: 177, Fig. 28b).

MALE

Head: Largely yellow to rufous, with slight brownish discoloration in the median portion of the front. The front is about two times longer than wide and has three pairs of strong inferior fronto-orbitals and one pair of superior fronto-orbital bristles. The post vertical bristles are moderately strong, and are about half as long as the superior fronto-orbitals.

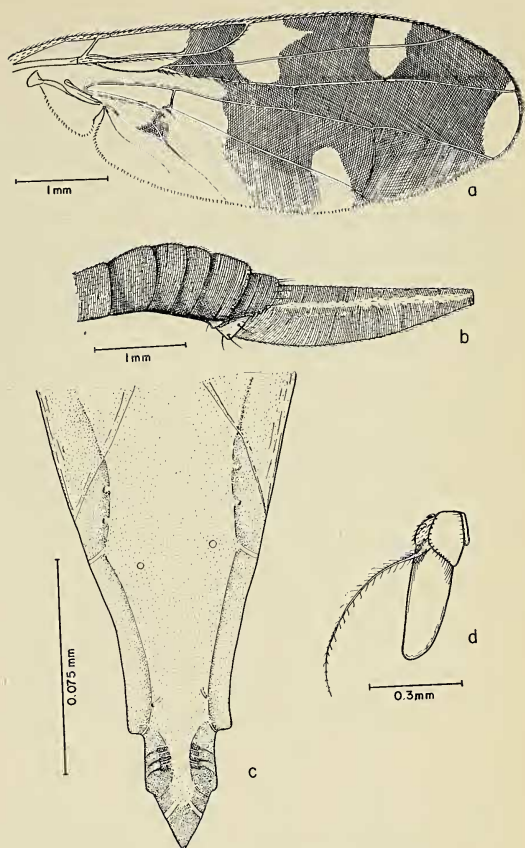


FIG. 4. *Euphranta (Staurella) canangae* n. sp. a, Wing; b, lateral aspect of abdomen and basal segment of ovipositor; c, apex of piercer; d, antenna.

The face is concave in profile and is unmarked. The antennae are reddish yellow, the arista is long pubescent. The third segment is about two times longer than wide and is slightly narrowed apically (Fig. 4d).

Thorax: The mesonotum is chiefly reddish brown, the median portion is yellowish in ground color and the mesonotum has a narrow yellow vitta extending down each side from the suture to the hind margin. A broad yellow vitta also extends on each side from the scutellum through the area between the inner supraalar and the dorsocentral bristles cephalad to just beyond the inner supraalars. The humeri and the area between them and the notopleura are yellow. The dorsocentral

bristles are situated closer to a line drawn between the posterior supraalar bristles than to one drawn between the inner supraalars. The pleura are yellow to rufous. The mesopleura each have three bristles near the upper margin. One sternopleural bristle is present. The scutellum is reddish brown in the median portion (between the median bristles) and is yellow on the sides. The metanotum is black. The pleuroterga are thickly covered with fine yellow hairs. The halteres are yellow.

Legs: Entirely rufous.

Wings: As in Figure 4*a*.

Abdomen: Almost entirely reddish brown, rather polished, on the dorsum, yellow on the venter; with a median yellow vitta extending down the dorsum from the base over segment four, and with the sides of terga one to three narrowly yellow. The fifth tergum has a row of strong black bristles at its apex. The genitalia are rather small and inconspicuous, mostly concealed within the broad fifth tergum.

Length: body, 6.3 mm.; wings, 5.5 mm.

FEMALE

Fitting the description of the male except for genital characters. The ovipositor is elongate and very distinctive. The basal portion (*in situ*) is about equal in length to the remainder of the abdomen (Fig. 4*b*). The extended ovipositor is about 7.2 mm. long. The basal segment is 2.7 mm. long by 1.2 mm. at its widest point. The spiracles are situated midway of the segment, about 1.2 mm. from the anterior lateral margins. The inversion membrane is about 2.48 mm. long by 0.27 mm. at its widest point. The rasper is situated approximately 0.41 mm. from the base of the segment. The piercer is 2 mm. long by 0.13 mm. and the oviduct opens about 0.2 mm. from the tip. The piercer has two preapical notches on each side (Fig. 4*c*) but apparently has no preapical setae.

Holotype male, Los Baños, Philippine Islands, Mar. 1947, ex ilang-ilang [*ylang-ylang*, *Cananga odorata* (Lam.)] (L. B. Uichanco).

Allotype female and four paratypes, 3 males, 1 female, same data as type and one paratype female, Bohol Is., P. I., January, 1948 (Q. C. Chock).

The type and allotype are in the United States National Museum collection. The paratypes are in the following collections: Bernice P. Bishop Museum, Territorial Board of Agriculture and Forestry, Honolulu, and University of Hawaii.

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